REMARKS/ARGUMENTS

Claims 34-39 and 44-52 are pending in this application. Claims 34-39 and 44-52 stand rejected. Claims 34, 36, 38, 47 and 49 have been amended to clarify the claimed subject matter. No new matter has been added. In view of the following remarks, reconsideration and allowance of all pending claims are respectfully requested.

Claim Rejections under 35 U.S.C. §103

The Office Action rejected claim 34 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application No. 2003/0099303 ("Birru") in view of U.S. Patent No. 6,101,168 ("Chen"). With regard to claim 34, the cited art fails to teach or suggest claim 34. For example, the cited art fails to teach interleaving said first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data stream are interleaved within the sub frames.

For example, interleaving both first and second portions over each sub frame allows full packets of second portion data to be interleaved over a single sub frame. This in turn decreases the latency of the second portion, because a full second portion packet is available for reassembly once the sub frame is received, rather than becoming available only after the full frame is received. (Specification, at page 17). In contrast, Birru is directed to a method of encoding MPEG data with a single latency. (see Abstract). As such, Birru does not teach interleaving said first and second portions of encoded data streams over a broadcast frame. Chen fails to overcome this deficiency because Chen is simply directed to a method of inputting data

packets to a demultiplexer. As discussed below, other cited references, either single, or in motivated combination, fail to cure this deficiency.

For example, Hancharik teaches interleaving a first portion over a first group of subframes and, rather than interleaving, Hancharik encodes a second portion over a final subframe. (Hancharik, at col. 6, lines 28-51). Each data frame of Hancharik includes a synchronization subframe 314, a first traffic data subframe 316, a second traffic data subframe 318, and so on, up to a thirty sixth traffic data subframe 320, and a low latency data subframe 322. Each traffic data subframe is composed of standard latency data interleaved as taught by Chadwick. The single low latency data sub frame 322 is composed of low latency data encoded as a single word. Hancharik teaches that, rather than interleaving the low latency data, the low latency data should rely on a single block code that is a relatively simple encoding/decoding scheme, which introduces relatively low delay during the encoding and decoding processes. (Hancharik, at col. 7, lines 45-53).

As such, rather than relying on interleaving over a smaller portion of the frame to reduce latency, Hancharik teaches the use of a single block code to reduce latency. Thus, Hancharik teaches away from being modified to interleave low latency data. Therefore, Hancharik not only does not disclose, but also teaches away from being modified to include, interleaving said first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data stream are interleaved within the sub frames.

Chadwick fails to overcome this deficiency because Chadwick is simply directed to interleaving a single portion of data with a single latency (see Abstract). As such, the cited references, either singly or in motivated combination, do not teach or otherwise suggest the limitations of claim 34. Claim 34 is allowable.

The Office Action rejected claim 35 under 35 U.S.C. §103(a) as being unpatentable over Birru in view of Chen and further in view of PCT Patent Application No. WO 95/22233 ("Bessette"). With regard to claim 35, the cited art fails to teach or suggest claim 35. For example, the cited art fails to teach interleaving said first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data stream are interleaved within the sub frames. In contrast, Birru is directed to a method of encoding MPEG data with a single latency. (see Abstract). As such, Birru does not teach interleaving said first and second portions of encoded data streams over a broadcast frame. Chen fails to overcome this deficiency because Chen is simply directed to a method of inputting data packets to a demultiplexer. Because Birru teaches a single latency that is used and Bessette teaches simply a method to dynamically compensate for variable transmission delays in a packet network, the cited references, either singly or in motivated combination, do not teach or otherwise suggest the limitations of claim 35. Claim 35 is allowable.

The Office Action rejected claims 38-39 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,949,822 ("Hancharik") in view of U.S. Patent No. 5,442,646 ("Chadwick"). With regard to claim 38, the cited art fails to teach or suggest claim 38. For

example, the cited art fails to teach interleaving said first and second portions of data packets over a broadcast frame that includes sub frames that comprise interleaved portions of said first and second portions of data packets, wherein the second portions of data packets are interleaved within the sub frames. Interleaving both first and second portions over each sub frame provides the advantage of allowing full packets of second portion data to be interleaved over a single sub frame. This in turn decreases the latency of the second portion, as a full second portion packet is available for reassembly once the sub frame is received, rather than becoming available only after the full frame is received. (Specification, at page 17). In contrast, Hancharik teaches interleaving a first portion over a first group of subframes and, rather than interleaving, encoding a second portion over a final subframe. (Hancharik, at col. 6, lines 28-51).

Each data frame of Hancharik includes a synchronization subframe 314, a first traffic data subframe 316, a second traffic data subframe 318, and so on, up to a thirty sixth traffic data subframe 320, and a low latency data subframe 322. Each traffic data subframe is composed of standard latency data interleaved as taught by Chadwick. The single low latency data sub frame 322 is composed of low latency data encoded as a single word. Hancharik teaches that, rather than interleaving the low latency data, the low latency data should rely on a single block code that is a relatively simple encoding/decoding scheme, which introduces relatively low delay during the encoding and decoding processes. (Hancharik, at col. 7, lines 45-53). As such, rather than relying on interleaving over a smaller portion of the frame to reduce latency, Hancharik teaches the use of a single block code to reduce latency. Thus, Hancharik teaches away from being modified to interleave low latency data. Therefore, Hancharik not only does not disclose, but also teaches away from being modified to include, interleaving said first and second portions

of data packets over a broadcast frame that includes sub frames that comprise interleaved portions of said first and second portions of data packets, wherein the second portions of data packets are interleaved within the sub frames.

Chadwick fails to overcome this deficiency because Chadwick is simply directed to interleaving a single portion of data with a single latency. (see Abstract). As such, the cited references, either singly or in motivated combination, do not teach or otherwise suggest the limitations of claim 38. Claim 38 is allowable.

With regard to claim 39, claim 39 depends from claim 38 and is allowable for the reasons stated above.

The Office Action rejected claims 34, 36-39, 44-51 under 35 U.S.C. §103(a) as being unpatentable over Hancharik in view of Chadwick and further in view of Birru. With regard to claim 34, the cited art fails to teach or suggest claim 34. For example, the cited art fails to teach interleaving said first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data stream are interleaved within the sub frames. Interleaving both first and second portions over each sub frame provides the advantage of allowing full packets of second portion data to be interleaved over a single sub frame. As stated above, Hancharik teaches interleaving a first portion over a first group of subframes and, rather than interleaving, encoding a second portion over a final subframe. Further, rather than relying on interleaving over a smaller portion of the frame to reduce latency, Hancharik teaches the use of a single block code to reduce latency. Thus, Hancharik teaches

away from being modified to interleave low latency data. Therefore, Hancharik not only does not disclose, but also teaches away from being modified to include, interleaving said first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data streams are interleaved within the sub frames.

Birru fails to overcome this deficiency because Birru is merely directed to a method of encoding MPEG data with a single latency. (see Abstract). Similarly, Chadwick also fails to overcome this deficiency because Chadwick is simply directed to interleaving a single portion of data with a single latency. (see Abstract). As such, the cited references, either singly or in motivated combination, do not teach or otherwise suggest interleaving segments of a subframe that comprises data of different latencies of claim 34. Claim 34 is allowable.

With regard to claim 36-37, claims 36-37 depends from claim 34 and are allowable for the reasons stated above.

With regard to claim 38, the cited art fails to teach or suggest claim 38. For example, the cited art fails to teach interleaving said first and second portions of data packets over a broadcast frame that includes sub frames that comprise interleaved portions of said first and second portions of data packets, wherein the second portions of data packets are interleaved within the sub frames. Interleaving both first and second portions over each sub frame provides the advantage of allowing full packets of second portion data to be interleaved over a single sub frame. As stated above, Hancharik teaches interleaving a first portion over a first group of subframes and, rather than interleaving, encoding a second portion over a final subframe.

Further, rather than relying on interleaving over a smaller portion of the frame to reduce latency, Hancharik teaches the use of a single block code to reduce latency. Thus, Hancharik teaches away from being modified to interleave low latency data. Therefore, Hancharik not only does not disclose, but also teaches away from being modified to include, interleaving said first and second portions of data packets over a broadcast frame that includes sub frames that comprise interleaved portions of said first and second portions of data packets, wherein the second portions of data packets are interleaved within the sub frames.

Birru fails to overcome this deficiency because Birru is directed to a method of encoding MPEG data with a single latency. (see Abstract). Similarly, Chadwick also fails to overcome this deficiency because Chadwick is simply directed to interleaving a single portion of data with a single latency. (see Abstract). As such, the cited references, either singly or in motivated combination, do not teach or otherwise suggest the limitations of claim 38. Claim 38 is allowable.

With regard to claims 39, 44-46, claims 39, 44-46 depend from claim 38 and are allowable for the reasons stated above.

With regard to claim 47, the cited art fails to teach or suggest claim 47. For example, the cited art fails to teach interleaving the first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data streams are interleaved within the sub frames. Interleaving both first and second portions over each sub frame provides the advantage of allowing full packets of second portion data to be interleaved

over a single sub frame. This in turn decreases the latency of the second portion, as a full second portion packet is available for reassembly once the sub frame is received, rather than becoming available only after the full frame is received. (Specification, at page 17). In contrast, Hancharik teaches interleaving a first portion over a first group of subframes and, rather than interleaving, encoding a second portion over a final subframe. (Hancharik, at col. 6, lines 28-51).

Each data frame of Hancharik includes a synchronization subframe 314, a first traffic data subframe 316, a second traffic data subframe 318, and so on, up to a thirty sixth traffic data subframe 320, and a low latency data subframe 322. Each traffic data subframe is composed of standard latency data interleaved as taught by Chadwick. The single low latency data sub frame 322 is composed of low latency data encoded as a single word. Hancharik teaches that, rather than interleaving the low latency data, the low latency data should rely on a single block code that is a relatively simple encoding/decoding scheme, which introduces relatively low delay during the encoding and decoding processes. (Hancharik, at col. 7, lines 45-53). As such, rather than relying on interleaving over a smaller portion of the frame to reduce latency, Hancharik teaches the use of a single block code to reduce latency. Thus, Hancharik teaches away from being modified to interleave low latency data. Therefore, Hancharik not only does not disclose, but also teaches away from being modified to include, interleaving the first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data streams are interleaved within the sub frames.

Chadwick fails to overcome this deficiency because Chadwick is simply directed to interleaving a single portion of data with a single latency. (see Abstract). As such, the cited references, either singly or in motivated combination, do not teach or otherwise suggest the limitations of claim 47. Claim 47 is allowable.

With regard to claims 48-51, claims 48-51 depend from claim 47 and are allowable for the reasons stated above.

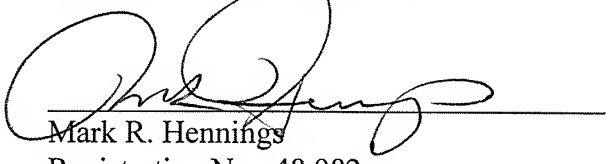
The Office Action rejected claim 52 under 35 U.S.C. §103(a) as being unpatentable over Hancharik in view of Chadwick and Birru, and further in view of U.S. Patent No. 5,487,089 ("Misaizu"). With regard to claim 52, the cited art fails to teach or suggest claim 52. For example, the cited art fails to teach recites interleaving the first and second portions of encoded data streams over a broadcast frame that includes sub frames that comprise interleaved segments of said first and second portions of encoded data streams, wherein the second portions of encoded data streams are interleaved within the sub frames. Hancharik teaches interleaving a first portion over a first group of subframes and, rather than interleaving, encoding a second portion over a final subframe. Further, rather than relying on interleaving over a smaller portion of the frame to reduce latency, Hancharik teaches the use of a single block code to reduce latency. Thus, Hancharik teaches away from being modified to interleave low latency data. Therefore, Hancharik not only does not disclose, but also teaches away from being modified to include, interleaving said first and second portions of data packets over a broadcast frame that includes sub frames that comprise interleaved portions of said first and second portions of data packets, wherein the second portions of data packets are interleaved within the sub frames.

Birru fails to overcome this deficiency because Birru is directed to a method of encoding MPEG data with a single latency. (see Abstract). Similarly, Chadwick also fails to overcome this deficiency because Chadwick is simply directed to interleaving a single portion of data with a single latency. (see Abstract). Similarly, Misaizu also fails to overcome this deficiency because Misaizu is simply directed to a Nyquist filter for digital modulation that uses a shift register. (see Abstract). As such, the cited references, either singly or in motivated combination, do not teach or otherwise suggest the limitations of claim 52. Claim 52 is allowable.

In view of the foregoing amendments and remarks, all pending claims are believed to be allowable and the application is in condition for allowance. Therefore, a Notice of Allowance is respectfully requested. Should the Examiner have any further issues regarding this application, the Examiner is requested to contact the undersigned attorney for the applicants at the telephone number provided below.

Respectfully submitted,

MERCHANT & GOULD P.C.



Mark R. Hennings
Registration No. 48,982
Direct Dial: 206.342.6289

MERCHANT & GOULD P.C.
P. O. Box 2903
Minneapolis, Minnesota 55402-0903
206.342.6200